

REMARKS

Claim 1 is revised to clarify that the circuit layout is applied to the surface of an insulating layer of the flat flex cable. Claims 1-6 and 13 remain in this application. No claim has been allowed.

The undersigned thanks Examiner Harris for the telephone interview on November 14, 2005. During that interview, the undersigned discussed the proposed revision of Claim 1 and pointed out reasons why *Ueno* (US 6,392,148) could not anticipate the invention claimed in the present application. Those reasons are set forth below. The Examiner said the differences between *Ueno* and the claimed invention were persuasive and that he would reconsider the issue.

Claims 1-6 and 13 stand rejected as anticipated by *Ueno*. This rejection is based on the Examiner's characterization of that reference, in paragraph 3 of the last Office action. The applicant respectfully traverses that characterization of *Ueno* and the rejection based thereon.

Flat flex cables are increasingly used in place of conventional round-conductor cables, particularly in applications such as automotive vehicles in which the physical space for electrical cables is limited. Such flat flex cables are usually utilized as electric lines connected to respective electric or electronic components, e.g., controlled devices, switches, a power supply, power consuming devices, and so on. These connections conventionally take place by means of separable plug-type connections (specification, page 1, lines 30-33).

The present invention aims to reduce the number of required plug connectors by arranging electric/electronic components on a circuit layout on the surface of an

insulating layer of the flat flex cable and connected to at least one conductor of the flat flex cable (page 2, lines 6-8). The plastic surface of the cable is provided with a circuit layout including at least one electric/electronic component and at least one electrical connection between the component (s) and at least one conductor of the flat flex cable. This arrangement reduces a number of required plug-type connectors and thus achieves a superior reliability in comparison with the state of the art, without increasing the structural space required by the flat flex cable.

The rejection assets that *Ueno* discloses a flat flex cable containing at least two electrical conductors embedded in an insulating layer 16, having a circuit layout 10 applied on the surface of the flat flex cable and connected to at least one conductor 12 of the cable. The rejection further assets that at least one electric and/or electronic component 103 is arranged on *Ueno*'s circuit layout 10. However, a close reading of *Ueno* shows otherwise.

(*Ueno* contains confusing terminology, perhaps arising from an inartful translation of that application from its native language. In particular, *Ueno* uses the term "FFC" to identify flat flex cables in their conventional meaning (e.g., elements 11 in Fig. 17; and column 2, lines 17-22), and to identify individual conductor paths or tracks. Moreover, *Ueno* sometimes uses "FFC" to designate both the conventional flat flex cables and individual conductor paths or tracks in the same sentence (e.g., column 6, lines 25-28 and 39-42). One must keep in mind that confusing terminology while trying to understand what *Ueno* discloses. The present applicant uses terminology (page 5, lines 16-20) distinguishing between conductors of the flat flex cable (FFC) and strip conductors applied on the insulating layer according to the present invention.

The rejection asserts that *Ueno* discloses a flat flex cable in Fig. 7 containing at least two electrical conductors 12. In fact, Fig. 7 shows a wire harness joint (column 4, lines 14-17) which is separate from a flat flex cable and used to connect various different flat flex cables as shown in Figs. 5(a)-(c). *Ueno's* wire harness joints contain strip conducting paths or tracks 11 (which he confusingly calls "FFC's") extending between connections 12, and those connections 12 are exposed through windows 21 of insulation film 20 where the connections are connected to the tips of conductors in the wire harnesses 30 —that is, conventionally understood FFCs— shown in Fig. 5 (column 7, lines 4-6).

Accordingly, it should now be seen that *Ueno* does not disclose "a circuit layout 10 applied on the surface of the flat flex cable". Instead, what *Ueno* describes as a "wiring circuit assembly 10" actually is a wire harness joint comprised by an insulation film 20 and a number of electrically conductive paths 11 (column 5, lines 3-17). The "at least one insulating layer 16 (sic)" does not appear in that reference, but the undersigned believes "16" was meant to identify *Ueno's* insulation film 20.

Ueno also fails to show "at least one electric and/or electronic component 103... arranged on the circuit layout 10". Switch 103 appears in Fig. 12, where *Ueno* describes a conventional electric circuit used in a vehicle and connected between trunk wires 111 comprising conventional wire bundles interconnected by terminals 14 (Figs. 12 and 13; column 1, lines 16-36). In other words, *Ueno* identifies components 103 as parts of conventional vehicle wiring that existed before the advent of flat flex cables, and before he made his invention. *Ueno* does not, however, disclose an electric or electronic

component arranged on his wire harness joint assembly 10. Those joint assemblies merely interconnect separate flat flex cables to make up a wire harness.

Considering now Claim 1 relative to what *Ueno* actually discloses, one must first recognize that *Ueno* describes wire harness joints for flat flex cables, although Claim 1 defines a particular structure for flat flex cable itself. The claimed flat flex cable structure requires a circuit layout applied on the surface of an insulating layer of the flat flex cable and connected to at least one conductor of the cable. However, *Ueno* fails to disclose a circuit layout (or anything else) applied on the surface of a flat flex cable *as that term is defined and used by the present applicant.*

Moreover, Claim 1 defines a flat flex cable further requiring at least one electric and/or electronic component arranged on the circuit layout (that is, in turn, applied to the surface of an insulating layer of the flat flex cable). *Ueno* fails to disclose any electric or electronic component arranged on a circuit layout applied to the surface of a flat flex cable, again as the present applicant defines that term. For those reasons alone, *Ueno* fails to anticipate the applicant's flat flex cable as defined in Claim 1.

Dependent Claims 2-6 and 13 likewise are novel over *Ueno* for the reasons given above.

Furthermore, the rejection of Claim 3 asserts that *Ueno* connects electronic components 103 to the circuit layout 10 by conducted bonding, citing column 5, lines 1-67 and column 6, lines 40-43 in support. However, those passages in *Ueno* are silent about electronic components (103 or otherwise) connected to his wire harness joint 10. Moreover, as mentioned above, *Ueno* describes electrical switches 103 only in his prior-art context of separate components connected together by electrical conductors in a

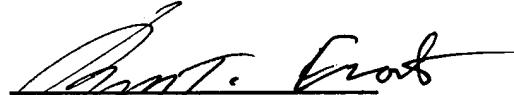
conventional round or tubular wire bundle. For that additional reason, Claim 3 is novel over *Ueno*.

The rejection of Claim 4 asserts that *Ueno* discloses electronic components 103 covered with housing shells or by means of selective casting or a protective lacquer 20. It should now be evident that *Ueno* lacks any such disclosure. His components 103 are not part of the wire harness joint assembly and are not disclosed as covered with housing shells or anything else.

The foregoing is submitted as a complete response to the Office action identified above. The applicant respectfully submits that all claims remaining in this application are allowable over the art of record and solicits a notice of allowance for this application.

Respectfully submitted,

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